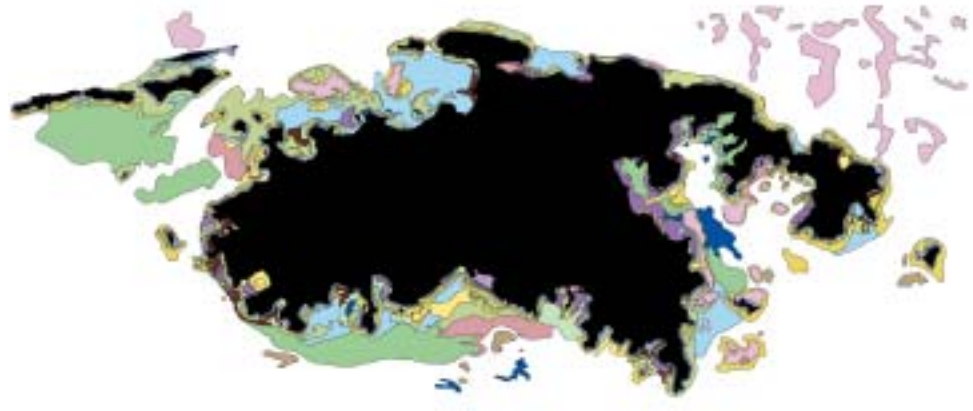


# Marine inventory to pay monitoring dividends in Caribbean parks

By Jim Petterson

## HYPER-SPECTRAL IMAGE OF BENTHIC HABITATS AROUND VIRGIN ISLANDS NATIONAL PARK, ST. JOHN

- Hardbottom/Reef Rubble
- Hardbottom/Uncolonized Bedrock
- Land
- Macroalgae/Patchy/10–50%
- Macroalgae/Patchy/50–90%
- Mangrove
- Mud
- Reef/Colonized Bedrock
- Reef/Colonized Pavement
- Reef/Colonized Pavement with Channels
- Reef/Linear Reef
- Reef/Linear Reef (Aggregated)
- Reef/Linear Reef (Individual)
- Reef/Scattered Coral-Rock
- Sand
- Seagrass/Continuous
- Seagrass/Patchy/10–30%
- Seagrass/Patchy/30–50%
- Seagrass/Patchy/70–90%
- Unknown



AN AMBITIOUS MARINE inventory program in the Caribbean national parks is paving the way for the development of an integrated fish monitoring program throughout the South Florida/Caribbean Monitoring Network. The inventory is being conducted cooperatively by staff of Virgin Islands National Park, the recently authorized (2001) Virgin Islands Coral Reef National Monument, Buck Island Reef National Monument, the National Oceanic and Atmospheric Administration (NOAA) Biogeography Program, and the Caribbean Field Station of the USGS Biological Resources Division.

The project is ongoing and builds on results from an extensive fish inventory of the waters around St. John that began in 1995 with the establishment of the prototype Long-Term Ecological Monitoring Program at Virgin Islands National Park. These efforts demonstrated that accurate marine habitat maps were needed in order to monitor fish for the long term, and in 1998, NOAA undertook efforts to produce habitat maps of the ocean floor surrounding Puerto Rico and the U.S. Virgin Islands. The maps were based on aerial photos and hyper-spectral imaging, which is rich in detail. The staff at Virgin Islands National Park, Buck Island Reef National Monument, and the USGS played integral roles in the subsequent accuracy assessments of the maps. Their efforts required scuba-diving visits to randomly selected sites to describe biotic habitat features and topographic complexity. At the same time they sampled macroinvertebrates and reef fish using transect and point count techniques.

To date, approximately 450 sites have been characterized in Virgin Islands National Park (see map) and Buck Island Reef National Monument. The accuracy of the habitat maps has been verified and valuable information pertaining to the biodiversity and health of the parks is available. Particularly noteworthy is the documentation of the extremely diverse and healthy coral reef communities in the deeper water regions of Virgin Islands Coral Reef National Monument and previously unidentified high-diversity patch reefs hidden among seagrass beds at Buck Island Reef. The inventory staff selected sample sites randomly from the two dominant marine communities—reef hardbottom and seagrass beds—both inside and outside park and monument boundaries. This sampling strategy will allow comparisons between the no-take areas in the monuments and the adjacent waters outside the designated marine protected areas, where harvesting is permitted, to test for differences in habitats and biotic communities.

The next step, which the network partners began in 2003, is to use the fish population sampling data to develop a robust reef fish monitoring protocol that can be applied to all the marine parks in the South Florida/Caribbean Monitoring Network. ■

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